MEMORANDUM

Water Pollution Control Commission
P. O. Box 829
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98501

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WA-56-1010

TO: Merley McCall, Tom Haggarty

DATE: January 20, 1970

FROM: Ron Lee

SUBJECT: Waikiki Sewage Lagoon Seepage Rate Study; Spokane

SUMMARY

The average daily seepage rate from the smaller of the two Waikiki sewage lagoons (0.8 acres) was computed to be 0.79 inches/day over a fifteen day period (Table 1). The calculated average daily flow into the lagoon was 0.029 MGD (range 0.24-0.035 MGD). A daily evaporation rate constant of 0.05 inches/day was used for days where precipitation values were in trace amounts or less. On days in which measurable precipitation occurred, a zero loss for evaporation was computed. This information was obtained from the U. S. Weather Bureau at the Spokane International Airport.

DISCUSSION

When this investigation was initiated, the influent discharged to the Waikiki lagoons was introduced into both cells simultaneously. The influent flow was too small and the seepage rate was too high to allow a sufficient volume of water to exist in either lagoon. Essentially the lagoons were acting as filters, leaving nothing but anaerobic sludge deposits.

At the beginning of the seepage rate study, the entire influent flow was diverted to the smaller cell and recorded. Another recorder was installed to measure the increase in lagoon water level height. During the course of the study, the water level height consistently increased. The increased volume of water in the cell enhanced the water quality considerably, but the lagoon remained turbid.

I have enclosed some additional rough data giving hourly flow averages with maximum and minimum flow rates for each reading taken from the recorder chart. As a recommendation, I would suggest that arrangements be made with the Whitworth Water District to eliminate the obvious problem of excessive seepage from these lagoons. If I can be of further assistance, please do not hesitate to contact me.

RL:lm

Attachment

Table 1. Seepage rate calculation data for the Waikiki sewage lagoon seepage rate study.

	Date (1969)															
	10/30	10/31	11/1	11/2	11/3	11/4	11/5	11/6	11/21	11/22	11/23	11/24	11/25	11/26	1:	27
Lagoon Influent (Daily Ave. in MGD)	0.031	0.031	0.029	0.033	0.033	0.035	0.035	0.035	0.022	0.023	0.024	0.024	0.026	0.026	0.	24
Volume retained in Lagoon (Daily Ave. in MGD)	0.013	0.011	0.009	0.015	0.015	0.016	0.016	0.016	0.007	0.008	0.009	0.009	0.010	0.009	0.	)9
Total precipitation (inches/day)	.03	---	---	.19	---	---	---	---	.10	.07	---	---	---	---		.(
Seepage Rate (inches/day)	.86	0.87	0.87	1.02	0.78	0.82	0.82	0.82	.79	0.76	0.64	0.64	0.68	0.73	0.	